THE OHIO STATE ENGINEER

MEMBER ENGINEERING COLLEGE MAGAZINES ASSOCIATED

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M A R C H 4 1 9 3 7

Wearproof by Welding

Thus engineers obtain the service of the best alloys at the cost of ordinary steel

THROUGHOUT industry, wear on metals is an important cost factor. Until recently, most wearing parts had to be made entirely of special high-cost materials. Now, by welding, rapidly wearing surfaces can be covered with a wear-resistant alloy. Welded additions of bronze or Haynes Stellite—a wear-resisting alloy of cobalt, chromium and tungsten—create excellent wear resistance at low cost.

Long Life at Low Cost

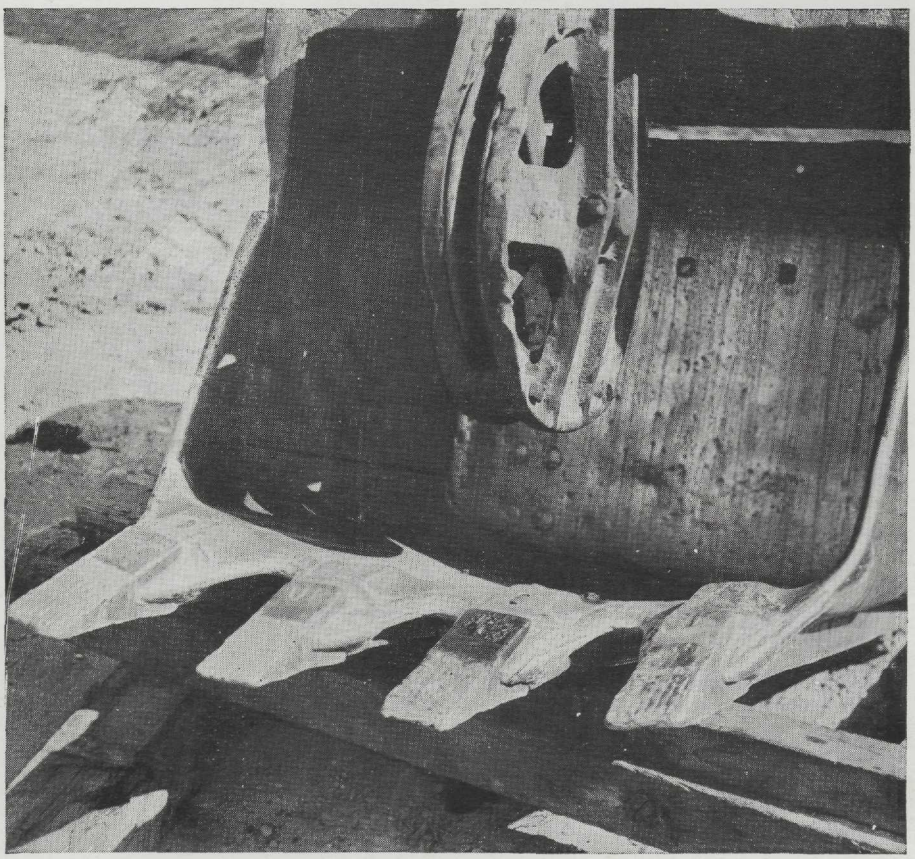
Wherever metal has hard work to do, wearproofing by welding plays an important part. Under the toughest conditions, in mines and mills, in factories and on farms, in construction and oil-drilling, it is saving money and time.

Wearproofed parts will last many times as long as those made of unprotected iron or steel. Welding cost, including the necessary alloy, is only a fraction of the total cost of a new part. Then, after long, hard service, the part can be re-covered—another wear-resisting surface can be welded on at small cost, and the part is again as good as new.

Extensive Savings

Savings through the application of wear-resistant alloys are not confined to the lower cost of the part involved. Less power is used. Inventories are cut due to the consequently lowered investment and simplified control. Machine shutdowns for replacement are fewer. Maintenance costs are decreased, and a smaller crew can handle the necessary repairs. Further, the plant, without added equipment, can turn out a greater volume of production.

Figures drawn from case-histories where wearproofing is used are often surprising. A glance at the adjoining column will indicate many of the possibilities inherent in this process.



INTO THIS YAWNING CAVITY goes the dirt to make Grand Coulee Dam. Bucket front and teeth were hard-faced by welding. The result of this wearproofing was six months' service on Bonneville Dam, and many more months of trouble-free, repairless service on Grand Coulee.

Welding makes automotive exhaust valve seats good for 150,000 miles and more, with no regrinding in truck and bus motors, the toughest kind of service. These valve seats are wearproofed by welding Haynes Stellite to the contact surface. Ordinary cast-iron seats need regrinding every ten thousand miles.

* * *

Welding saved $2200 in one year for an Ohio pulp mill. Haynes Stellite was welded to the wearing surfaces of shredder knives. This work cost $90; knives, from the scrap heap, cost nothing. Hard-faced knives lasted for six months, and were again refaced by welding. New knives cost $200, last one month.

* * *

Welding a wear-resistant facing on the cutting edges of boiler-tube cleaners yields a twenty-fold saving—each cleaner will clean twenty times as many tubes as an ordinary cutter. When worn, hard-faced cutters are rebuilt for another long service.

* * *

Welding cured pump troubles in a pulp mill. Shafting on a sludge pump was wearing rapidly. Packing glands had to be tightened every hour, completely repacked once a week. The shaft was fast disappearing. Hard-faced by welding with wear-resistant metal, the shaft ran for three months with no attention, no appreciable wear.

* * *

Welding lengthens the life of blooming-mill shear clutches three times. Clutches previously ran 49 days, then went to the scrap pile. Now, wearproofed by welding, these clutches average 217 days before any attention is necessary. The same clutches are then refaced and used again.

* * *

Welding has solved an impossible lubricating problem. At a Southern mill where heater furnaces are fed by internal conveyor, rolls and bearings operate at 750 degrees Fahrenheit. Lubrication is impossible. A wear-resistant coating, built up on the rolls and bearings by welding, makes the conveyor last indefinitely, eliminates *need* for lubrication.

* * *

Tomorrow's engineers will be expected to know how to take advantage of this modern metalworking process. Many valuable and interesting technical booklets describing the application of the oxy-acetylene process are available without obligation. For further information write any Linde office.

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